

CHECKLIST TO DESIGNATE AREAS OF EVALUATION FOR REQUESTS FOR PROPOSAL (RFP)

MDOT PROJECT MANAGER			JOB NUMBER (JN)	CONTROL SECTION (CS)
DESCRIPTION IF NO JN/CS				
MDOT PROJECT MANAGER: Check all items to be included in RFP. WHITE = REQUIRED GRAY SHADING = OPTIONAL Check the appropriate Tier in the box below			CONSULTANT: Provide only checked items below in proposal.	
TIER I (\$25,000-\$99,999)	TIER II (\$100,000-\$250,000)	TIER III (>\$250,000)		
			Understanding of Service	
			<i>Innovations</i>	
			<i>Safety Program</i>	
N/A			Organization Chart	
			Qualifications of Team	
			Past Performance	
Not required as part of official RFP	Not required as part of official RFP		Quality Assurance/Quality Control	
			Location. The percentage of work performed in Michigan will be used on all contracts unless the contract is for on-site inspection, then location should be scored for the on-site inspection.	
N/A	N/A		Presentation	
N/A	N/A		Technical Proposal (if Presentation is required)	
3 pages including cover sheet (No Resumes)	7 pages	19 pages	Total maximum pages for RFP not including key personnel resumes	

REQUEST FOR PROPOSAL

The Michigan Department of Transportation (MDOT) is seeking professional services for the project contained in the attached scope of services.

If your firm is interested in providing services, please indicate your interest by submitting a Proposal, Proposal/Bid Sheet or Bid Sheet as indicated below. The documents must be submitted in accordance with the latest "Consultant/Vendor Selection Guidelines for Service Contracts" and "Guideline for Completing a Low Bid Sheet(s)", if a low bid is involved as part of the selection process. **Referenced Guidelines are available on MDOT's website under Doing Business > Requests for Proposals.**

RFP SPECIFIC INFORMATION

BUREAU OF HIGHWAYS

BUREAU OF TRANSPORTATION PLANNING **

OTHER

THE SERVICE WAS POSTED ON THE ANTICIPATED QUARTERLY REQUESTS FOR PROPOSALS

NO

YES

DATED _____ THROUGH _____

Prequalified Services – See page ____ of the attached Scope of Services for required Prequalification Classifications.

Non-Prequalified Services - If selected, the vendor must make sure that current financial information, including labor rates, overhead computations, and financial statements, if overhead is not audited, is on file with MDOT's Office of Commission Audits. This information must be on file for the prime vendor and all sub vendors so that the contract will not be delayed.

Qualifications Based Selection – Use Consultant/Vendor Selection Guidelines

For all Qualifications Based Selections, the selection team will review the information submitted and will select the firm considered most qualified to perform the services based on the proposals. The selected vendor will be contacted to confirm capacity. Upon confirmation, that firm will be asked to prepare a priced proposal. Negotiations will be conducted with the firm selected.

**** For RFP's that originate in Bureau of Transportation Planning only**, a price proposal must be submitted at the same time as, but separate from, the proposal. Submit directly to the Contract Administrator/Selection Specialist, Bureau of Transportation Planning (**see address list, page 2**). The price proposal must be submitted in a sealed manila envelope, clearly marked in large red letters **"PRICE PROPOSAL – TO BE OPENED ONLY BY SELECTION SPECIALIST."** The vendor's name and return address **MUST** be on the front of the envelope. The price proposal will only be opened for the highest scoring proposal. Unopened price proposals will be returned to the unselected vendor(s). Failure to comply with this procedure may result in your bid being opened erroneously by the mail room.

For a cost plus fixed fee contract, the selected vendor must have a cost accounting system to support a cost plus fixed fee contract. This type of system has a job-order cost accounting system for the recording and accumulation of costs incurred under its contracts. Each project is assigned a job number so that costs may be segregated and accumulated in the vendor's job-order accounting system.

Qualifications Review / Low Bid - Use Consultant/Vendor Selection Guidelines. See Bid Sheet Instructions for additional information.

For Qualification Review/Low Bid selections, the selection team will review the proposals submitted and post the date of the bid opening on the MDOT website. The notification will be posted at least two business days prior to the bid opening. Only bids from vendors that meet proposal requirements will be opened. The vendor with the lowest bid will be selected. The selected vendor may be contacted to confirm capacity.

Best Value - Use Consultant/Vendor Selection Guidelines. See Bid Sheet Instructions below for additional information. The bid amount is a component of the total proposal score, not the determining factor of the selection.

Low Bid (no qualifications review required - no proposal required.) See Bid Sheet Instructions below for additional instructions.

BID SHEET INSTRUCTIONS

A bid sheet(s) must be submitted in accordance with the "Guideline for Completing a Low Bid Sheet(s)" (available on MDOT's website). The Bid Sheet is located at the end of the Scope of Services. Submit bid sheet(s) separate from the proposal, to the address indicated below. The bid sheet(s) must be submitted in a sealed manila envelope, clearly marked in large red letters **"SEALED BID – TO BE OPENED ONLY BY SELECTION SPECIALIST."** The vendor's name and return address **MUST** be on the front of the envelope. Failure to comply with this procedure may result in your bid being opened erroneously by the mail room.

PROPOSAL SUBMITTAL INFORMATION

REQUIRED NUMBER OF COPIES FOR PROJECT MANAGER	PROPOSAL DUE DATE	TIME DUE
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PROPOSAL AND BID SHEET MAILING ADDRESSES

Mail the multiple proposal bundle to the MDOT Project Manager or Other indicated below.

MDOT Project Manager

MDOT Other

Mail one additional stapled copy of the proposal to the Lansing Office indicated below.

Lansing Regular Mail	OR	Lansing Overnight Mail
Secretary, Contract Services Div - B225 Michigan Department of Transportation PO Box 30050 Lansing, MI 48809		Secretary, Contract Services Div - B225 Michigan Department of Transportation 425 W. Ottawa Lansing, MI 48833
Contract Administrator/Selection Specialist Bureau of Transportation Planning B340 Michigan Department of Transportation PO Box 30050 Lansing, MI 48809		Contract Administrator/Selection Specialist Bureau of Transportation Planning B340 Michigan Department of Transportation 425 W. Ottawa Lansing, MI 48833

GENERAL INFORMATION

Any questions relative to the scope of services must be submitted by e-mail to the MDOT Project Manager. Questions must be received by the Project Manager at least four (4) working days prior to the due date and time specified above. All questions and answers will be placed on the MDOT website as soon as possible after receipt of the questions, and at least three (3) days prior to the RFP due date deadline. The names of vendors submitting questions will not be disclosed.

MDOT is an equal opportunity employer and MDOT DBE firms are encouraged to apply. The participating DBE firm, as currently certified by MDOT's Office of Equal Opportunity, shall be listed in the Proposal

MDOT FORMS REQUIRED AS PART OF PROPOSAL SUBMISSION

5100D – Request for Proposal Cover Sheet

5100G – Certification of Availability of Key Personnel

(These forms are not included in the proposal maximum page count.)

Michigan Department of Transportation

SCOPE OF SERVICE FOR TRAFFIC AND SAFETY SERVICES

CONTROL SECTION: Various

JOB NUMBER: TBD

PROJECT LOCATION: Statewide

DESCRIPTION OF WORK: Provide experienced consultant personnel to conduct before and after safety studies and determine the effectiveness for each location. This should be acquainted with the Safety Management System (SMS) to collect data.

PRIMARY PREQUALIFICATION CLASSIFICATION:
Safety Studies

SECONDARY PREQUALIFICATION CLASSIFICATION:
NA

MDOT PROJECT MANAGER:

Bob Rios
Staff Specialist
Safety Programs Unit
Traffic and Safety Division
Michigan Department of Transportation
Murray D. Van Wagoner Building
P. O. Box 30050
Lansing, Michigan 48909
Phone: 517-335-1187
Fax: 517-373-2330
E-mail: riosb@michigan.gov

PROJECT SCHEDULE

The anticipated start date of the service is: March 2, 2007

The anticipated completion date for the service is: July 31, 2007

DBE REQUIREMENT: None

GENERAL BACKGROUND:

Traffic and safety professionals and program administrators are often faced with the task of determining how best to spend the limited resources to attain maximum safety benefits on our roads and highways. One of the most important issues regarding a safety program is its effectiveness, as well as, the effectiveness of the implemented countermeasure in terms of its potential for reducing the frequency and severity of crashes. It is also important to quantify the impacts of the installed countermeasures and identify which treatments are the most beneficial in improving safety on the roadways.

Once the effectiveness of safety improvements is evaluated, decisions regarding future installations can be made. For example, if a countermeasure was found to be very successful, the results provide valuable information to support future safety treatment policies. On the other hand, it may be determined that a countermeasure was only marginally effective in improving safety and in those cases, the traffic conditions and the countermeasure should be analyzed further in order to determine if further modifications to the treatment would improve safety. Evaluations are also critical in identifying treatments that are ineffective. Thus, the countermeasures that were proven not to work should not be used in the future.

Safety is a very important issue in transportation and a primary concern of all MDOT programs. The goal of MDOT's Safety Program is to reduce traffic crashes and injuries while increasing the efficiency and capacity of their highway system. To reach this goal, MDOT has undertaken two major categories of safety projects including:

1. Trunkline Safety Improvement Projects
2. Local Safety Improvement Projects

OBJECTIVES AND TASKS OF THE PROPOSED RESEARCH PROJECT:

The objectives of this phase of the proposed research project are as follows:

1. Perform "naïve" "before and after" evaluation studies at selected program locations.
2. Identify effectiveness of specific countermeasures in alleviating traffic crash and injury problems.
3. Perform benefit-cost analysis of specific countermeasures.
4. Prepare a final report.

The methods and procedures for achieving these objectives are shown in the following section in the form of tasks. Each objective may include one or more tasks needed to accomplish the overall project objectives.

Task A.1: Consult with MDOT to select locations for evaluation of the safety program.

Purpose: To coordinate with MDOT to select locations where safety improvements have been installed and have sufficient “after” crash data to allow a meaningful effectiveness evaluation.

Consultants and their staff will meet with MDOT officials as necessary in order to obtain or review locations, projects and programs for evaluation.

The following locations will be studied for each of the following safety improvement projects.

---- 42 Trunkline Safety Improvement Projects

---- 91 Local Safety Improvement Projects

Data to be furnished by MDOT – Project location, fixes crash type, costs, and site access to crash data.

Deliverables: Finalized lists of locations where improvements have been installed are to be included in the effectiveness evaluation.

Task A.2: Review information from MDOT to identify corridor/intersection implemented countermeasures at the study locations and their underlying justification.

Purpose: To review information from MDOT for the selected locations in order to identify the safety deficiencies and implemented countermeasures in order to evaluate their effectiveness.

Information will be obtained from MDOT and reviewed in order to identify the pre-improvement safety deficiencies. The installed countermeasures will also be reviewed in order to identify the specific crash and injury characteristics that the safety measures were intended to mitigate. This review is critical in identifying targeted crash types and implemented countermeasures. In addition, the specific crash type will be identified in order to determine the effectiveness of specific countermeasures. For example, if left-turn phases are implemented at an intersection and left-turn head-on crashes can be attributed to the installed left-turn phase countermeasure. This is critical to the analysis because specific countermeasures are designed to alleviate certain crash types.

Consultant will also develop a set of measures of effectiveness (MOE) that will be used in the evaluation study as a part of this task.

1. Review and identify the countermeasures and the associated crash types to be tested for effectiveness.

Task A.3: Collect “before” and “after” data and perform a traffic crash analysis for the “after” period

Purpose: To collect and analyze traffic crash data for the selected improved sites for the “before” and “after” periods.

In order to perform the “before and after” analysis, the UD-10 traffic crash reports for all selected sites will be obtained from MDOT files for the “before and after” implementation periods. Traffic crash history (UD-10 reports), for approximately three years of data will be obtained for all selected locations for the “before” period from MDOT. The “before” data for all sites will be for the same months of the “after” period of the study. For example, if improvements were installed in June 1999 and will be continuously updated on a monthly basis as soon as the UD-10 traffic crash reports are available.

Note: Consultant will only be able to access MDOT crash data during normal MDOT business hours and when project Project Manager is on site.

Consultant staff will test the effectiveness of the improvements at all locations for the following:

- Total number of crashes
- Crashes by various types
- Injury crashes

Crash pattern tables and collision diagrams will be prepared for the “before” and “after” periods, in order to provide a visual representation of the crash history experienced at each location.

Figure A1. Crash Pattern Tables

Deliverables:

1. Crash data analysis for the “before” and “after” periods in the form of tables and bar charts.
2. Pattern tables for the “before” and “after” period.

Task C4: Perform statistical testing of the implemented projects

Purpose: To perform an evaluation and determine the effectiveness of individual projects at the selected locations as a part of the MDOT’s Safety Program.

It is important to evaluate the results of projects in terms of their effectiveness in mitigating the identified traffic crash and crash severity problems. This task will be devoted to performing an evaluation of the traffic crash data in order to determine if there has been a reduction in traffic crashes and/or crash severity. This evaluation can be performed by collecting the current traffic crash information, preparing new crash analysis-pattern tables, and performing a “before and after” analysis. The “before and after” evaluation plan, as shown in Figure A, will clearly show if crashes have been reduced. The change in crash experiences will be tested for statistical significance.

Figure A2. Before and After Study

The statistical significance of the effectiveness of the safety projects and countermeasures must be tested in order to better understand whether the changes observed in the measures of effectiveness (MOE) are attributable to the safety treatments or due to some other factors unrelated to the project. The level of confidence to perform the statistical tests will be at 95 percent.

Since traffic crash data is discrete and assumed to occur randomly, a Poisson test of significance will be used to determine whether significant changes in MOE's have occurred. The MOE will be total crashes, injuries and specific crash type. A sample null (H_0) and alternative (H_a) hypotheses that will be used in this analysis are as follows:

H_0 : There is no significant difference between crashes or injuries before and after the implemented countermeasure(s).

H_a : There is a significant difference between crashes or injuries before and after the implemented countermeasure(s)

Deliverables:

1. Evaluation of crash data analysis
2. Results of the effectiveness evaluations in the form of tables and charts identifying the percent reductions in traffic crashes at each location and by types.

Task A5: Perform comprehensive effectiveness evaluation studies for groups of sites.

Purpose: To identify the effectiveness of specific countermeasures by performing comprehensive effectiveness evaluation studies for groups of intersection to answer key questions regarding various policy-related issues.

A comprehensive set of “before and after” studies will be performed as a part of this task. These studies will include the analysis and evaluation of grouped site locations in order to identify the effectiveness of specific countermeasures. Results of these analyses will provide sufficient information to the MDOT to support some safety treatments as policies.

A comprehensive evaluation of specific and groups of safety treatments and their effectiveness in mitigating traffic crash and injury problems will be performed as a part of this task. This activity will relate specific sets of safety treatments with traffic crash and injury reductions.

The following is a list of potential safety treatments that may be tested:

- Road construction projects.

The statistical test that will be used to test the effectiveness of specific countermeasure is the chi-squared (χ^2)-test. The χ^2 -test will be used to determine if there are differences in traffic crashes between a group of sites “before” and “after” or between test and control groups during the “after” period. The χ^2 -test is used when the data being analyzed is discrete, as the case for traffic crashes.

There are two analysis questions that can be made depending on the evaluation plan used (before-after study or comparative parallel study). The analysis question for the “before and after” study is as follows:

Are the crash frequencies for the group of sites treated with a specific countermeasure significantly different during the “before” and “after” periods? Thus, the null and alternative hypothesis would be:

H_0 : There is no difference in traffic crashes “before” and “after” the installed countermeasure.

H_a There is a difference in traffic crashes “before” and “after” the installed countermeasures.

The χ^2 -statistic can be calculated by the following equation:

K = number of locations

N_B = number of crashes in the before period

N_A = number of crashes in the after period

The result of this calculation gives the calculated χ^2 value (χ^2_{calc}). The critical χ^2 value may be obtained from statistical tables (χ^2_{cr}) using the degrees of freedom and the alpha level, which is related to the level of confidence. If $\chi^2_{calc} > \chi^2_{cr}$ then the differences are significant and the null hypothesis is rejected.

The results of this analysis can be extremely helpful in order for the traffic and safety community to implement similar treatments in the future, which will further improve traffic safety in Michigan.

Deliverables: 1. Evaluation of crash data analysis for specific safety effects.
2. Determine the degree of success of the countermeasures

Task A6: Perform a comprehensive benefit to cost analysis for individual sites and groups of sites.

Purpose: To perform a comprehensive economic analysis for individual sites and groups of sites in order to determine the cost effectiveness.

A comprehensive benefit to cost (B/C) analysis will be performed as a part of this task. Such economic analysis will be performed for each of the improved sites independently, as well as, in groups of similar safety treatments and for the sites with similar geometry.

The benefits for this analysis will be in terms of societal cost savings due to the reduction in traffic crashes. The economic analysis from the societal perspective will be conducted using the comprehensive crash costs based on recent National Safety Council's (NSC) traffic crash cost data.

The Equivalent Uniform Annual Benefits (EUAB) method will be used to determine the crash saving benefits and the Equivalent Uniform Annual Cost (EUAC) method will be used to determine the total project implementation costs. The benefit to cost ratio (EUAB/EUAC) will be used to assess the cost effectiveness of the improvement projects.

The study results will be available to the MDOT for their management decision making process, press releases and other uses.

Deliverables: 1.Results of economic analysis.

Task A6: Document results in a final report

Purpose: To document all of the tasks of this phase of the project so the sponsoring agencies have a complete understanding of the activities performed and the results from this project.

All activities performed and the results of this project will be documented in a final report. This final report will include an executive summary in order to highlight the significant findings of the study. It will be written in an easily understood manner in order to disseminate the findings to non-technical, as well as, technical professionals.

The detailed report will include the result of the "before" and "after" test for individual sites represented in various pattern tables and collision diagrams. The results of the tests for groups of sites will also be included in the final report in order to assess the effectiveness of countermeasures in order to address various policy-related issues. All traffic crash comparisons and trends will be displayed in bar charts and graphs. The statistical analyses for the effectiveness evaluation will be described and the results will be discussed, interpreted, as well as, presented in tabular form.

The final report will include the results of the comprehensive before and after
The results of this analysis will indicate the specific countermeasures that were effective in reducing traffic crashes and/or injuries.

The result of the benefit to cost analysis will be included in the final report to provide MDOT with cost effectiveness details for locations and specific countermeasures for their management decision making process, press releases and other uses.

A draft report will be submitted to the MDOT for review. The comments and issues raised by the MDOT will be discussed and addressed and the final report will be submitted.

Deliverables: 1. Prepare a draft report
2. Prepare a final report

CONSULTANT RESPONSIBILITIES:

A. The MDOT Traffic Staff Specialist will be the first point of contact when determining need for Consultant personnel to aid MDOT in providing services for state jurisdictional work.

B. Consultant shall furnish all services and labor necessary to conduct and complete the studies, described herein.

C. The Consultant shall also furnish all materials, equipment, supplies, and incidental necessary to perform the Services (other than those designated in writing to be furnished by the Department) consistent in supplying this work. The services shall be performed to the satisfaction of the Department consistent with applicable professional standards.

D. The Consultant's principal contact with the Department shall be the MDOT Traffic Staff Specialist.

E. The Services described herein are financed with public funds. The Consultant shall comply with all Federal and State laws, rules, and regulations.

F. The Consultant shall notify the Project Manager, in writing, prior to any personnel changes from those specified in the Consultant's original approved proposal. Any personnel substitutions are subject to review and approval of the project Engineer Manager.

G. The Consultant shall provide the necessary [personnel to adequately perform the requirements of this Agreement, and that his/her employees will possess the experience, knowledge, and character to qualify them for the particular duties each is to perform.

H. The Consultant shall provide a written Monthly Progress Report to MDOT project manager detailing hourly charges and appropriate MDOT job number that Consultant personnel has conducted during time period.

I. The Consultant will make contact with the Project Manager every two weeks to report progress and schedule report by phone, e-mail, or meeting.

MDOT RESPONSIBILITIES:

MDOT will provide an office and appropriate computer equipment (software and hardware) on-site at the Traffic Safety Programs office for Consultant personnel to use during time of gathering data. The job number for this work will be given to Consultant personnel on which work time should be charged.

MDOT will provide date as specified in the work plan required to complete this project.

PAYMENT SCHEDULE:

Compensation for this Scope of Design Services shall be on an actual cost plus fixed fee basis.

CONSULTANT PAYMENT:

All invoices/bills for services must be directed to the Department and follow the 'then current' guidelines. The latest copy of the "Professional Engineering Service Reimbursement Guidelines for Bureau of Highways" is available on MDOT's Bulletin Board System. This document contains instructions and forms that must be followed and used for invoicing/billing; payment may be delayed or decreased if the instructions are not followed.

Payment to the CONSULTANT for Services rendered shall not exceed the "Cost Plus Fixed Fee Not to Exceed Maximum Amount" unless an increase is approved in accordance with the contract with the CONSULTANT. All invoice/bills must be submitted with 14 calendar days of the last date of services being performed for that invoice.

Direct expenses will not be paid in excess of that allowed by the Department for its own employees. Supporting documentation must be submitted with the invoice/bill, for all billable expenses on the Project. The only hours that will be considered allowable charges for this contract are those that are directly attributable to the activities of this Project. Hours spent in administrative, clerical, or accounting roles for billing and support, are not considered allowable hours; there will be no reimbursement for these hours.

Reimbursement for overtime hours will be limited to time spent on this project in excess of forty hours per week. Any variations to this rule should be included in the price proposal.

This scope is for "as-needed" services, as such, the hours provided are only an estimate. The Consultant will be reimbursed a proportionate share of the fixed fee based on the portion of these hours in which services have been provided to the Department. The fixed allowed for this project will be 11.0%.

